

CLAIMS:

1. A manufacturing method of a soft magnetic green compact comprising:
mixing a magnetic powder including an iron system powder and a mixed powder including a resin powder;
compressively molding the magnetic powder and the mixed powder in a mold by a powder metallurgic method in a mold to form a green compact; and
applying thermal treatment to the green compact; wherein
the resin powder includes a lubrication function and a binding function; and
wherein
a composition amount of the resin powder assumes 0.10-3.00 weight percent relative to the total weight before the molding and assumes 0.01-0.50 weight percent relative to the total weight after the molding and the thermal treatment.
2. A manufacturing method of a soft magnetic green compact comprising:
mixing a magnetic powder formed by coating an insulation film on a surface of an iron system powder and a mixed powder including a resin powder;
compressively molding the magnetic powder and the mixed powder by a powder metallurgic method with a mold to form a green compact; and
applying thermal treatment to the green compact; wherein
the resin powder includes a lubrication function and a binding function; and
wherein
a composition amount of the resin powder assumes 0.10-3.00 weight percent relative to the total weight before the molding and assumes 0.01-0.50 weight percent relative to the total weight after the molding and the thermal treatment.
3. The manufacturing method of the soft magnetic green compact according to Claim 1, wherein the resin powder includes a polyamide system resin whose maximum particle diameter is equal to or smaller than 200 μ m.
4. A manufacturing method of a soft magnetic green compact comprising:

mixing a magnetic powder including an iron system powder and a mixed powder including a resin powder;
compressively molding the magnetic powder and the resin powder in a mold by a powder metallurgic method with a mold to form a green compact; and
applying thermal treatment on the green compact; wherein
the resin powder includes a lubrication function and a binding function; and
wherein
the resin powder includes a polyamide system resin and a thermoplastic resin having a melting point equal to or higher than 200°C.

5. The manufacturing method of the soft magnetic green compact according to Claim 4, wherein a composition amount of the polyamide system resin and the thermoplastic resin having the melting point equal to or higher than 200°C assumes 0.10-3.00 weight percent relative to a total weight before the molding and assumes 0.01-0.80 weight percent relative to a total weight after the molding and the thermal treatment.
6. The manufacturing method of the soft magnetic green compact according to Claim 4, wherein the thermoplastic resin having the melting point equal to or higher than 200°C includes polyphenylene sulfide system resin.
7. The manufacturing method of the soft magnetic green compact according to Claim 1, wherein the thermal treatment is performed at 100-450°C.
8. The manufacturing method of the soft magnetic green compact according to Claim 1, wherein the green compact after the thermal treatment includes density of 6.6-7.4 g/cm³.
9. The manufacturing method of the soft magnetic green compact according to Claim 1, wherein the thermal treatment is performed at oxidizing ambient.

10. A soft magnetic green compact comprising:
a magnetic powder including an iron system powder;
a mixed powder including a resin powder;
a green compact formed by compressively molding the magnetic powder and the mixed powder by a powder metallurgic method, the green compact applied with thermal treatment; and
the resin powder including a lubrication function and a binding function;
wherein
a composition amount of the resin powder assumes 0.10-3.00 weight percent relative to the total weight before the molding and assumes 0.01-0.50 weight percent after the molding and the thermal treatment.

11. A soft magnetic green compact comprising:
a magnetic powder including an iron system powder provided with an insulation film coating on a surface thereof;
a mixed powder including a resin powder;
a green compact formed by compressingly molding the magnetic powder and the resin powder in a mold by a powder metallurgic method, the green compact applied with thermal treatment; and
the resin powder including a lubrication function and a binding function;
wherein
a composition amount of the resin powder assumes 0.10-3.00 weight percent relative to the total weight before the molding and assumes 0.01-0.50 weight percent relative to the total weight after the molding and the thermal treatment.

12. The soft magnetic green compact according to Claim 10, wherein the resin powder includes a polyamide system resin whose maximum particle diameter is equal to or smaller than 200 μ m.

13. A soft magnetic green compact comprising:

a magnetic powder including an iron system powder;

a mixed powder including a resin powder;
a green compact formed by compressively molding the magnetic powder and the mixed powder by a powder metallurgic method, the green compact applied with thermal treatment; and
the resin powder including a lubrication function and a binding function;
wherein
the resin powder includes a polyamide system resin and a thermoplastic resin having a melting point equal to or higher than 200°C.

14. The soft magnetic green compact according to Claim 13, wherein the thermoplastic resin having the melting point equal to or higher than 200°C includes a polyphenylene sulfide system resin.

15. The soft magnetic green compact according to Claim 10, wherein the thermal treatment is performed at 100-450°C.

16. The manufacturing method of the soft magnetic green compact according to Claim 10, wherein the green compact after the thermal treatment includes density of 6.6-7.4 g/cm³.

17. A soft magnetic powder material comprising:
a magnetic powder including an iron system powder;
a mixed powder including a resin powder;
a green compact formed by compressively molding the magnetic powder and the mixed powder by a powder metallurgic method, the green compact applied with thermal treatment; and
the resin powder including a lubrication function and a binding function;
wherein
a composition amount of the resin powder assumes 0.10-3.00 weight percent relative to the total weight before the molding and assumes 0.01-0.50 weight percent relative to the total weight after the molding and the thermal treatment.